Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 13(2): 2095, 17 April 2017 doi: https://doi.org/10.15560/13.2.2095
ISSN 1809-127X © 2017 Check List and Authors

# Another puzzle piece: new record of the Fringed Leaf Frog, *Cruziohyla craspedopus* (Funkhouser, 1957) (Anura: Phyllomedusidae), in the eastern Amazon Rainforest

**Leandro J. C. L. Moraes**[1, 2, 3] & **Dante Pavan**[2]

[1] Programa de Capacitação Institucional, Instituto Nacional de Pesquisas da Amazônia, Av. André Araújo 2936, 69067-375, Manaus, Amazonas, Brazil
[2] Ecosfera Consultoria e Pesquisa em Meio Ambiente Ltda., R. Gioconda Mussolini 291, 05591-120, São Paulo, São Paulo, Brazil
[3] Corresponding author. E-mail: leandro.jclm@gmail.com

**Abstract:** We report new occurrence of *Cruziohyla craspedopus* (Funkhouser, 1957) in the eastern Amazon Rainforest. This is only the second record from the state of Pará, Brazil and represents the easternmost known point of this species' range.

**Key words:** Brazil; state of Pará; canopy; conservation; rare species; range extension

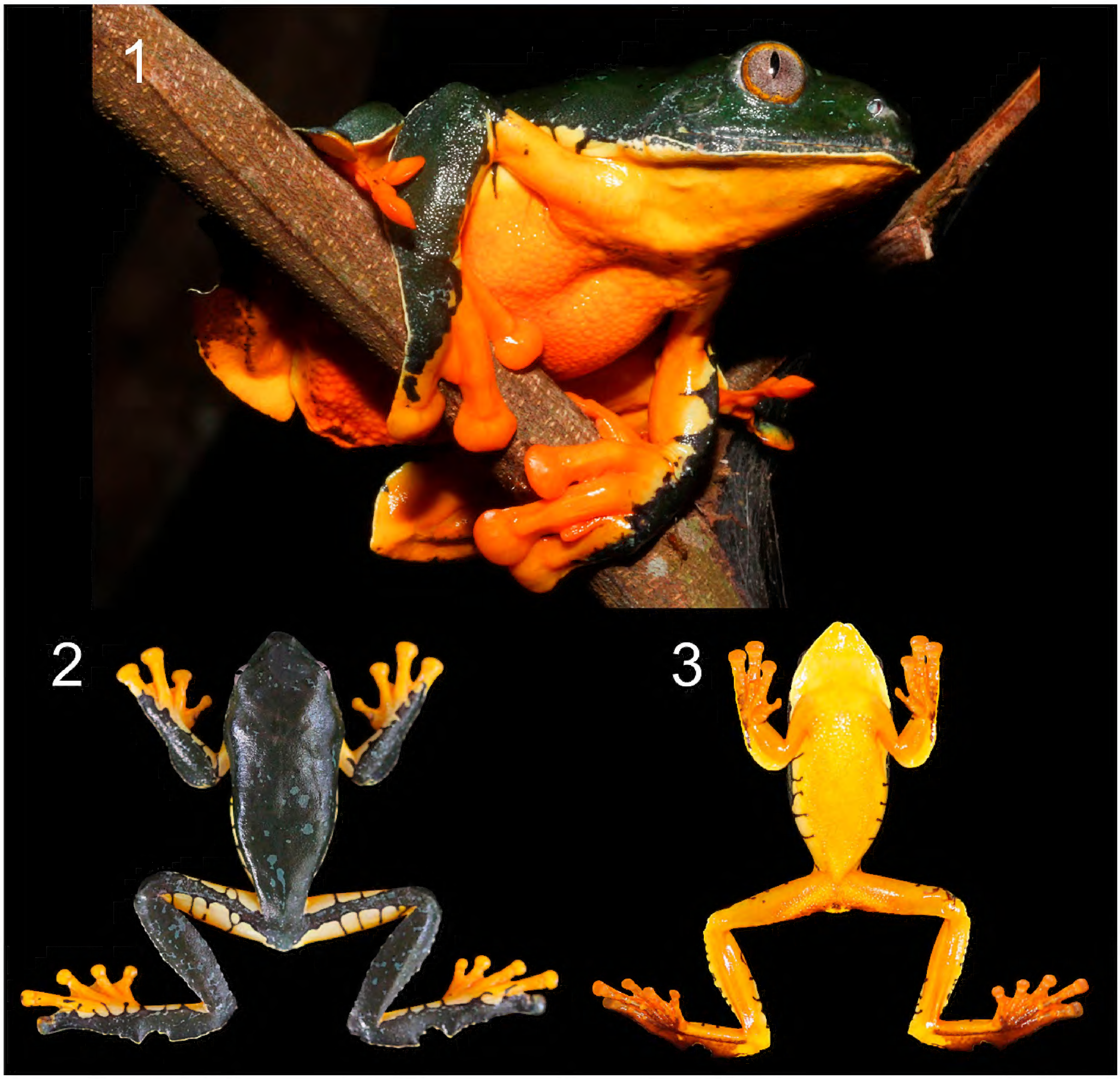
*Cruziohyla craspedopus* (Funkhouser, 1957) is an Amazonian phyllomedusid frog with a remarkable external morphology, presenting a bicolored iris, narrow dermal fringes on lower jaw and on the outer edge of the forearm, and well-developed fringes on the outer edge of tarsus, with three pointed flaps. The dorsal surface of the head, body and limbs is dark green punctuated with grayish white irregular blotches, and the ventral surfaces are bright orange, having six to eight vertical green bars in the flanks on a yellow background color (Funkhouser 1957; Hoogmoed & Cadle 1991).

This species is known from Amazon Rainforest lowlands, in Colombia, Peru, Ecuador, and Brazil (Frost 2017). In Brazil, *C. craspedopus* was reported for only five occurrences in Acre (07.9781° S, 071.4516° W; Venancio et al. 2014), Amazonas (03.3546° S, 059.8605° W; Lima et al. 2003), Mato Grosso (09.8546° S, 058.2493° W; Rodrigues et al. 2011), Rondônia (08.1065° S, 063.4833° W; Meneghelli et al. 2011), and Pará (06.0885° S, 057.6831° W; Bitar et al. 2015). Herein, we present a new record of *Cruziohyla craspedopus* from the state of Pará, which represents the easternmost known occurrence of the species.

On 2 October 2013, during a long-term search for amphibians and reptiles in the middle Tapajós River region, we found an amplectant pair of *C. craspedopus* with typical external morphology. The female was laying his eggs above a plastic bucket lid filled with rain water, which was part of a pitfall trap (04.7077° S, 056.4414° W, 70 m a.s.l., in the municipality of Itaituba, Pará). This site is located in a well-preserved Terra Firme forest, never flooded by large rivers, inside the limits of a federal conservation unit, the Parque Nacional da Amazônia (in English, Amazon National Park). Specimens were collected under the Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA) collection permits #066/2012. We obtained their morphometric data based on measurements traditionally considered in anuran taxonomy, using calipers to the nearest 0.1 mm. We deposited the specimens in the Collection of Amphibians and Reptiles (INPA-H) of the Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil (accession numbers INPA-H 37436 and 37437).

The specimens were morphologically identified as *C. craspedopus* with the aid of the original description, taxonomic guides, and other geographic distribution notes for the Brazilian Amazon (Funkhouser 1957; Lima et al. 2003; Meneghelli et al. 2011; Rodrigues et al. 2011; Venancio et al. 2014; Bitar et al. 2015). We also compared our specimens with voucher specimens from the Brazilian Amazon (INPA-H 10936 and 10937, male and female, respectively). In addition, the reproductive behaviour observed by us is exactly as previously described (Hoogmoed and Cadle 1991; Block et al. 2003; Turell et al. 2016).

This new record of *C. craspedopus* (male specimen in Figures 1–3) provides additional morphometric information on Brazilian specimens (Table 1). It extends the geographic range of this species in eastern Amazonia: ca. 2,250 km east from the type locality (municipality of Chicherota, Ecuador, 02.36° S, 076.63° W); 1,702 km northeast from the occurrence in Acre (Venancio et al. 2014); 860 km northeast from the occurrence in Rondônia (Meneghelli et al. 2011); 603 km northeast from the occurrence in Mato Grosso (Rodrigues et al. 2011); 408 km southeast from the occurrence in Amazonas (Lima et al. 2003); and




**Figures 1–3.** Adult male *Cruziohyla craspedopus* (INPA-H 37436, SVL: 62.1 mm) from the middle Tapajós River region, Brazil.**1.** Lateral view. **2.** Dorsal view. **3.** Ventral view.

207 km northeast from the first record in Pará (Bitar et al. 2015). This record represents the easternmost known occurrence of the species (Figure 4).

This species may have a wider distribution in the Amazon than expected (Hoogmoed & Cadle 1991). The difficulty to locate *C. craspedopus* is strictly correlated with its life mode, as individuals of this species mainly inhabit the upper branches of tall trees or in the forest canopy and only descend to lower branches to reproduce; however, reproductive periods are unpredictable and may occur at different times throughout the year (Hoogmoed & Cadle 1991; Block et al. 2003). Furthermore, this species seems to have a high specificity of breeding habitats (Turell et al. 2016), which also influences its geographic range and abundance. Therefore, individuals of *C. craspedopus* are more easily found during the reproductive period (and rarely reported in short-term studies), or where they are most abundant.

Geographic distributions are indistinct for species inhabiting the upper strata of the Amazon Forest, such as the lizard *Uracentron flaviceps* (Guichenot, 1855) (de Freitas et al. 2011) or milk frogs of the genus *Trachycephalus* Tschudi, 1838 (Gordo et al. 2013), and the lack of knowledge is amplified for inconspicuous species, such as some small frogs of the *Pristimantis lacrimosus* group (Guayasamin et al. 2006). The increasing access to unexplored areas, long-term field inventories, and artificial breeding habitat studies (Turell et al. 2016) in the Amazon Rainforest may reveal additional localities of occurrence to *C. craspedopus* and clarify its conservation status in Brazil.

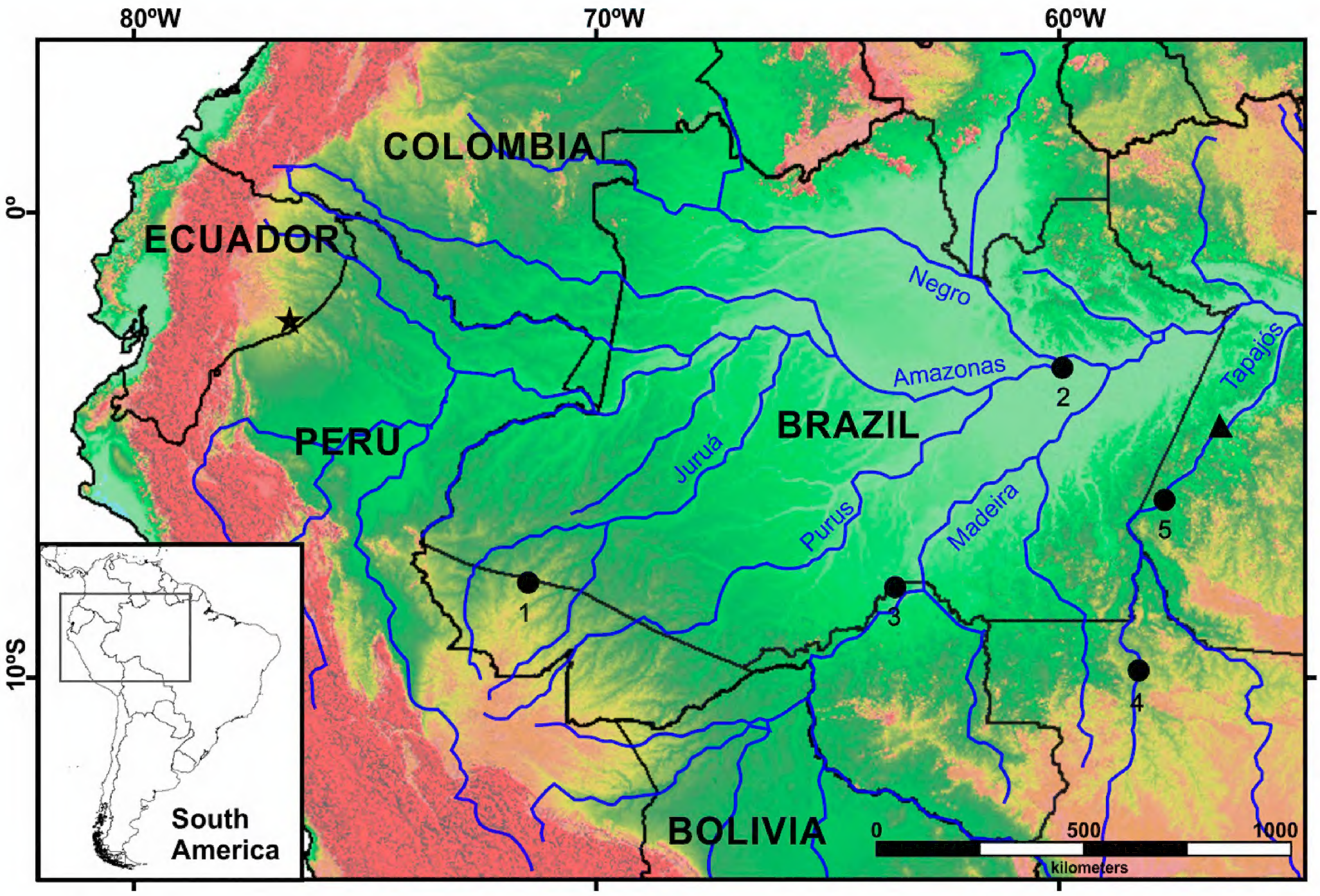



**Figure 4.** Distribution of *Cruziohyla craspedopus* in Brazil upon an altitudinal map (higher areas in warmer colors) with main Amazonian rivers. Datum WGS84. Star: type locality in Ecuador (FUNKHOUSER 1957), circles = previous records for Brazil, in the states of Acre (1) (VENANCIO et al. 2014), Amazonas (2) (LIMA et al. 2003), Rondônia (3) (MENEGHELLI et al. 2011), Mato Grosso (4) (RODRIGUES et al. 2011) and Pará (5) (BITAR et al. 2015), triangle = new record, second for the state of Pará.

**Table 1.** Measurements (in mm) of *Cruziohyla craspedopus* specimens recorded in the middle Tapajós River region: snout–vent length (SVL), forearm length from distal edge of hand to outer edge of flexed elbow (FAL), hand length from distal edge of hand to tip of finger III (HA), tibia length from proximal edge of flexed knee to heel (TL), foot length from proximal edge of inner metatarsal tubercle to tip of Toe IV (FL), head width at level of angle of jaw (HW), head length from angle of jaw to tip of snout (HL), eye diameter (ED), internarial distance (IN), interorbital distance (IO), eye–nostril distance (EN), snout length (SL), tympanum diameter (TD), finger III disc width (WFD), toe IV disc width (WTD), and thigh length (THL).

| Measurements | INPA-H 37436 (Male) | INPA-H 37437 (Female) |
|---|---|---|
| SVL | 62.1 | 75.5 |
| FAL | 12.8 | 16.4 |
| HA | 19.6 | 23.7 |
| TL | 29 | 36.3 |
| FL | 23.8 | 28.3 |
| HW | 20.2 | 25.5 |
| HL | 17.4 | 21.6 |
| ED | 5.2 | 5.7 |
| IN | 5 | 6.4 |
| IO | 12.7 | 14.3 |
| EN | 5.7 | 7.3 |
| SL | 9.7 | 11.1 |
| TD | 2.8 | 4.4 |
| WFD | 4 | 5.3 |
| WTD | 3.7 | 5.1 |
| THL | 30.4 | 38 |

## ACKNOWLEDGEMENTS

We thank all field workers, especially Mariel (resident of the São Luiz do Tapajós village), who found the specimens. We also thank CNEC Worleyparsons Engenharia S.A. for financial and logistical support. The Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) provided a scholarship to L.J.C.L. Moraes.

## LITERATURE CITED

BITAR, Y.O.C., K.R.A. SILVA, H.F.S. FILHO & L.C. PINHEIRO. 2015. Amphibia, Anura, Hylidae, *Cruziohyla craspedopus* (Funkhouser, 1957): distribution extension and first record from the state of Pará, Brazil. Check List 11(2): 1–3. https://doi.org/10.15560/11.2.1574

BLOCK, J.E., S.L. UNSER, J.K. MOONEY & E.R. WILD. 2003. *Agalychnis craspedopus* (Amazon Leaf Frog). Reproduction. Herpetological Review 34(2): 134–135.

DE FREITAS, M.A., D.P.F. DE FRANÇA & D. VERÍSSIMO. 2011. Distribution extension of *Uracentron flaviceps* (Guichenot, 1855) (Reptilia: Squamata): Second record for the state of Acre, Brazil. Check List 7(6): 823–824. https://doi.org/10.15560/7.6.823

FROST, D.R. (ed.) 2017. Amphibian species of the world: an online reference. Version 6.0. Eletronic database. New York: American Museum of Natural History. Accessed at http://research.amnh.org/herpetology/amphibia/index.html, 19 March 2017.

FUNKHOUSER, A. 1957. A review of the Neotropical tree-frogs of the

genus *Phyllomedusa*. Occasional Papers of the Natural History Museum of Stanford University 5: 1–90.

Guayasamin, J.M., S.R. Ron, D.F. Cisneros-Heredia, W. Lamar & S.F. McCracken. 2006. A new species of frog of the *Eleutherodactylus lacrimosus* assemblage (Leptodactylidae) from the western Amazon Basin, with comments on the utility of canopy surveys in lowland rainforest. Herpetologica 62(2): 191–202. https://doi.org/10.1655/05-40.1

Gordo, M., L.F. Toledo, P. Suárez, R.A. Kawashita-Ribeiro, R.W. Ávila, D.H. Morais, & I. Nunes. 2013. A new species of Milk Frog of the genus *Trachycephalus* Tschudi (Anura, Hylidae) from the Amazonian rainforest. Herpetologica 69(4): 466–479. https://doi.org/10.1655/herpetologica-d-11-00086

Hoogmoed, M.S. & J.E. Cadle. 1991. Natural history and distribution of *Agalychnis craspedopus* (Funkhouser, 1957) (Amphibia: Anura: Hylidae). Zoologische Mededelingen 65(8): 129–142. http://www.repository.naturalis.nl/document/149532

Lima, A.P., M.L. Guida & W. Hödl. 2003. *Agalychnis craspedopus*. Herpetological Review 34: 379.

Meneghelli, D., M.R. Messias & P.R.M. Sampaio. 2011. Amphibia, Anura, Hylidae, *Cruziohyla craspedopus* (Funkhouser, 1957): distribution extension in southwestern Amazonia, state of Rondônia, Brazil. Check List 7(6): 811–812. https://doi.org/10.15560/11039

Rodrigues, D.J., M.M. Lima & R.A. Kawashita-Ribeiro. 2011. Amphibia, Anura, Hylidae, *Cruziohyla craspedopus* (Funkhouser, 1957): distribution extension, new state record and distribution map in Brazil. Check List 7(2): 149–150. https://doi.org/10.15560/7.2.149

Turell, C., B. Crnobrna & M. Smith-Bessen. 2016. Monitoring a population of *Cruziohyla craspedopus* (Funkhouser, 1957) using an artificial breeding habitat. Amphibian & Reptile Conservation 10(1): 1–6.

Venancio, N.M., A.L.B. de Moura, T.F. Brito, T.N. de Melo & M.B. de Souza. 2014. First record of *Cruziohyla craspedopus* (Anura: Hylidae) for the State of Acre, with an updated distribution map. Herpetology Notes 7: 479–480.

**Authors' contributions:** LJCLM and DP collected the data, DP identified the species, LJCLM wrote the text, reviewed by DP.

**Received:** 7 September 2016
**Accepted:** 28 March 2017
**Academic editor:** Thiago R. de Carvalho